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## *Ecological Pyramids*

Diagrams of food webs only show qualitative information. Pyramids of numbers, biomass and energy provide us with quantitative information. The diagram below shows the appearance of these ecological pyramids for three food chains, all taken from the previous food web.

<b>Ecological Pyramids</b>	Fox ↑ Rabbit ↑ Nettle plant	Two-spot ladybird ↑ Small nettle aphid ↑ Nettle plant	Parasitic wasp ↑ Caterpillar of peacock butterfly ↑ Nettle plant
Pyramid of numbers compares the number of organisms at each trophic level			
Pyramid of biomass compares the mass of biological material at each trophic level			
Pyramid of energy compares the amount of energy passing through each trophic level over a period of time			

There are points to note about each type of pyramid. All pyramids are pyramidshaped other than the exceptions given below.

### Pyramids of Numbers

Pyramids of number allow us to compare the number of organisms present in each trophic level at a particular time. Although pyramids of number are pyramid-shaped there are two important exceptions. Pyramids will be upside down or inverted if there are a lot of small animals feeding on a large plant. They are also inverted where an animal has a large number of small parasites feeding on it. One human, for example, can have a large number of head lice. In the diagram, the butterfly larva is being fed on by a large number of parasitic wasps.

## **Pyramids of Biomass**

Biomass is a measure of the total amount of living material present. Pyramids of biomass allow us to compare the mass of organisms present in each trophic level at a particular time. Pyramids based on biomass get over the problems of organisms differing in size. Most pyramids of biomass are pyramid-shaped, but there is one important exception which you should know about. This is when the producer is a small organism which multiplies very rapidly. In this case, the total biomass of the producers present at any one time may be less than the total biomass of the primary consumers. The pyramid will again be inverted.

## **Pyramids of Energy**

Pyramids of energy allow us to compare the amount of energy passing through each trophic level over a period of time. They differ from the other two types of ecological pyramid which measure the number and biomass of organisms present in each trophic level at a particular time. Pyramids of energy are always pyramid-shaped. There are no exceptions to this rule.

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